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**From:** Bahadori, Tina [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=7DA7967DCAFB4C5BBC39C666FEE31EC3-BAHADORI, TINA]  
**Sent:** 11/20/2017 2:57:57 AM  
**To:** Owens, Beth [Owens.Beth@epa.gov]  
**Subject:** Fwd: STICS: Clearance Completion: #ORD-017673: Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment

Thanks Beth. Here is the rest of the conversation with Andrew.  
Tina

Begin forwarded message:

**From:** "Hotchkiss, Andrew" <Hotchkiss.Andrew@epa.gov>  
**Date:** November 19, 2017 at 2:50:17 PM EST  
**To:** "Bahadori, Tina" <Bahadori.Tina@epa.gov>  
**Cc:** "Vandenberg, John" <Vandenberg.John@epa.gov>, "Dutton, Steven" <Dutton.Steven@epa.gov>, "Jones, Samantha" <Jones.Samantha@epa.gov>, "D'Amico, Louis" <DAmico.Louis@epa.gov>, "Ross, Mary" <Ross.Mary@epa.gov>, "Lavoie, Emma" <Lavoie.Emma@epa.gov>  
**Subject:** Re: STICS: Clearance Completion: #ORD-017673: Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment

No problem! Glad I could help clarify.

Best regards,  
Andrew

On Nov 19, 2017, at 1:53 PM, Bahadori, Tina <Bahadori.Tina@epa.gov> wrote:

Thanks Andrew; this clarifies things significantly. No need to retrofit the Product Tracker...just with new products moving forward.

Thanks again for getting back to me.

Tina

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**From:** Hotchkiss, Andrew  
**Sent:** Sunday, November 19, 2017 1:27 PM  
**To:** Bahadori, Tina <Bahadori.Tina@epa.gov>  
**Cc:** Vandenberg, John <Vandenberg.John@epa.gov>; Dutton, Steven <Dutton.Steven@epa.gov>; Jones, Samantha <Jones.Samantha@epa.gov>; D'Amico, Louis <DAmico.Louis@epa.gov>; Ross, Mary <Ross.Mary@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>  
**Subject:** Re: STICS: Clearance Completion: #ORD-017673: Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment

Hi Tina,

Thanks for your message. I absolutely will do as you ask and already understood that to be standard practice. Frankly, I too was rather surprised by this notification and thought it might cause concern/frustration as to how a paper could slip through all the tracking we are currently doing for NCEA products. However, the paper was cleared more than 15 months ago (STICS email of "All Approvals Complete" received on August 9th, 2016) and published early in 2017. The online availability of the publication predates Product Tracker, although in the very early days of the Product Tracker I could have entered it as already accepted. If you would like, I could still enter it into the current Product Tracker and backdate the entries. This paper would, of course, be included in Product Tracker these days.

Anyway, your point is well taken and I am sorry this popped up out of nowhere. Please let me know if you have any additional questions or concerns.

Have a good afternoon!

Best regards,  
Andrew

On Nov 18, 2017, at 9:25 AM, Bahadori, Tina <[Bahadori.Tina@epa.gov](mailto:Bahadori.Tina@epa.gov)> wrote:

Hi Andrew,  
I understand that this work is a continuation of your collaborations with Earl. But being in a leadership role in NCEA, please make sure your papers are also on the radars of NCEA. This is particularly important when the topic is somewhat proximal to an upcoming FIFRA SAP meeting and may be considered by some (in OSCP) to be sensitive or high profile. And at all times, PLEASE make sure any product you are contributing to is in NCEA's Product Tracker.

Thanks very much,  
Tina

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**From:** ORD STICS@epa.gov [mailto:ORD STICS@epa.gov]  
**Sent:** Friday, November 17, 2017 1:15 PM  
**To:** Hotchkiss, Andrew <Hotchkiss.Andrew@epa.gov>; Hubal, Elaine <Hubal.Elaine@epa.gov>; Gray, Earl <Gray.Earl@epa.gov>; Hines, Ronald <Hines.Ronald@epa.gov>; Watts, Alice <watts.alice@epa.gov>; Russo, Bill <Russo.Bill@epa.gov>; Bahadori, Tina <Bahadori.Tina@epa.gov>; Saterson, Kathryn <Saterson.Kathryn@epa.gov>; Perovich, Gina <Perovich.Gina@epa.gov>; Cogliano, Vincent <cogliano.vincent@epa.gov>; D'Amico, Louis <DAmico.Louis@epa.gov>; Itkin, Cheryl <Itkin.Cheryl@epa.gov>; Franzosa, Jill <Franzosa.Jill@epa.gov>; Gessner, Lauren <gessner.lauren@epa.gov>; Miller-Dykeman, Ashley <miller-dykeman.ashley@epa.gov>  
**Subject:** STICS: Clearance Completion: #ORD-017673: Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment

The clearance for this product is complete:

- **Product type, subtype:** Journal Article, Peer Reviewed
  - **Product title:** Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment
  - **Author(s):** Howdeshell, K,A. Hotchkiss and E. Gray
  - **Initiator:** Earl Gray,ord/nheerl/tad/rtb
  - **ORD Tracking Number:** Tracking # ORD-017673
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- **Product Description / Abstract:** Toxicological studies of defined chemical mixtures assist human health risk assessment by establishing the manner by which chemicals interact with one another to induce an effect. This paper reviews how antiandrogenic chemical mixtures can alter reproductive tract development in rats with a focus on the reproductive toxicant phthalates. The reviewed studies compare observed mixture data to mathematical mixture model predictions based on dose addition or response addition to determine how the individual chemicals in a mixture interact (e.g., additive, greater or less than additive). Phthalate mixtures were observed to act in a dose additive manner based on the relative potency of the individual phthalates to suppress fetal testosterone production. Similar dose additive effects have been reported for mixtures of phthalates with antiandrogenic pesticides of differing mechanisms of action. Overall, data from these phthalate experiments in rats can be used in conjunction with human biomonitoring data to determine individual hazard indices, and recent cumulative risk

assessments in humans indicate an excess risk to antiandrogenic chemical mixtures that include phthalates only or phthalates in combination with other antiandrogenic chemicals.

- **Tracking and Planning**
  - Task ID:
  - Task: N/A - Not Applicable
  - Product Title: N/A - Not Applicable
  - Product Description: N/A - Not Applicable
  - Project:
  - Topic:
  - Research Program Area:
  
- **Product Category:** Does not require Advance Notification
- **QA form attached in STICS?:** Not Applicable
- **QAPP Reference:** N/A
- **Keywords:**
  - cumulative risk assessment
  - phthalates
  - antiandrogenic pesticides
  - male reproductive tract development
  - mixtures
  - TAD 16-043
  - Children's Environmental Health
  
- **Journal Name:** INTERNATIONAL JOURNAL OF HYGIENE AND ENVIRONMENTAL HEALTH
- **DOI:** <https://doi.org/10.1016/j.ijheh.2016.11.007>

This submission can be found in the History tab. [Please click here to access STICS.](#)